AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 | 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0001	08 SEP 99		

6. ISSUED BY	CODE	7. ADMINISTERED BY *(If other than Item 6)*	CODE
Department of the Army Corps of Engineers Fort Worth District			

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*	(√)	9A. AMENDMENT OF SOLICITATION NO.
	X	DACA63-99-B-0068
		9B. DATED *(SEE ITEM 11)* 06 AUGUST 1999
		10A. MODIFICATION OF CONTRACTS/ORDER NO.
		10B. DATED *(SEE ITEM 13)*
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☒ is extended, ☐ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

The Solicitation for HERBERT J. DEXTER ELEMENTARY SCHOOL RENOVATIONS, FORT BENNING, GEORGIA, is amended as follows:

See Continuation Sheet.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR _____ *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ *(Signature of Contracting Officer)*	16C. DATE SIGNED

Item 14. Continued.

a. CHANGES TO BID OPENING DATE, Standard Form 1442, First Page, Item No. 13.A.- In the second line, change the bid opening date from "16 SEPTEMBER 1999" to "17 SEPTEMBER 1999". Bid opening time will be 2 p.m. local time.

b. CHANGES TO TABLE OF CONTENTS.- Void the Table of Contents and add the accompanying new Table of Contents, bearing the notation "ACCOMPANYING AMENDMENT NO. 0001 TO SOLICITATION NO. DACA63-99-B-0068."

c. CHANGES TO THE SPECIFICATIONS

1) Replacement Sections - Replace the following sections with the accompanying new sections of the same number and title, bearing the notation "**AM #0001**:"

SECTION 01000 CONSTRUCTION SCHEDULE
SECTION 01010 CONTRACT CONSIDERATIONS
SECTION 01200 PROJECT MEETINGS
SECTION 01320 PROJECT SCHEDULE
SECTION 01560 TEMPORARY SAFETY CONTROLS
SECTION 01700 CONTRACT CLOSEOUT
SECTION 08700 BUILDERS' HARDWARE
SECTION 09510 ACOUSTICAL CEILINGS
SECTION 10440 INTERIOR SIGNAGE

2) Deleted Sections – Delete the following specification section:

SECTION 10522 FIRE EXTINGUISHERS AND CABINETS

d. CHANGES TO THE DRAWINGS

Replacement Drawings.- Replace the drawings listed below with the attached new drawings(s) of the same number, bearing the notation "**AM #0001**":

a01_1.cal Seq 5 A1 DEMOLITION PLAN A
a07_1.cal Seq 11 A7 FLOOR PLAN A
a09_1.cal Seq 13 A9 ENLARGED PLANS AND TOILET ELEVATIONS
a10_1.cal Seq 14 A10 FINISH SCHEDULE, MISCELLANEOUS SCHEDULES
a12_1.cal Seq 16 A12 EXTERIOR ELEVATIONS
a14_1.cal Seq 18 A14 CEILING PLAN A
a15_1.cal Seq 19 A15 CEILING PLAN B
a19_1.cal Seq 23 A19 ROOF PLAN B, ADDITIONAL MILLWORK
a20_1.cal Seq 24 A20 MILLWORK ELEVATIONS
e07_1.cal Seq 61 E7 ELECTRICAL POWER PLAN A
e11_1.cal Seq 65 E11 ELECTRICAL COMMUNICATIONS PLAN A
e12_1.cal Seq 66 E12 ELECTRICAL COMMUNICATIONS PLAN B
e13_1.cal Seq 67 E13 ELECTRICAL TECHNICAL POWER PLAN A
e14_1.cal Seq 68 E14 ELECTRICAL TECHNICAL POWER PLAN B
e19_1.cal Seq 73 E19 ELECTRICAL SCHEDULES
t01_1.cal Seq 77 T1 PARTIAL FLOOR PLAN A
t02_1.cal Seq 78 T2 PARTIAL FLOOR PLAN B

END OF AMENDMENT

00TOC

PROJECT TABLE OF CONTENTS

BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT

SPECIFICATIONS

-- End of Project Table of Contents --

SECTION 01000

CONSTRUCTION SCHEDULE
05/1998
AM #0001

PART 1 GENERAL

1.1 SCHEDULE

Commence, prosecute, and complete the work under this contract in accordance with the following schedule and Section 00800 SPECIAL CONTRACT REQUIREMENT clauses COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK and LIQUIDATED DAMAGES:

Item of Work	Commencement of Work (calendar days)	Completion of Work (calendar days)	Liquidated Damages per calendar day
(1) All work	Within 10 days after receipt of Notice to Proceed	365	$ 436.00

The first 60 days (maximum) shall be limited to site survey, the material procurement (including submittal and approval) process and the submittal and approval of the required contractual plans (including asbestos abatements and removal and disposal of lead-base paints). No physical work shall be accomplished on or in the building or to its utilities to render it without any of its utilities during this time frame. The remaining 305 days is for the Contractor to start and complete the physical work on the first building.

1.1.1 Testing of Heating and Air-Conditioning Systems

[AM #0001] The times stated for completion of this project include all required testing specified in appropriate specification sections of heating, air conditioning, and ventilation systems including HVAC Commissioning. Exceptions, boiler combustion efficiency test, boiler full load tests, or cooling tower performance tests, and refrigeration equipment full load tests, as specified in the applicable specifications, shall be performed in the appropriate heating/cooling season as determined by the Contracting Officer.

1.2 WORK RESTRICTIONS

With the exception of summer recess during June, July and August, portions of the building will remain occupied and in use during the contract period. See Specification Section 02050 - DEMOLITION, paragraph 1.8. With the exception of the areas listed in Specification Section 02050, paragraph 1.8, the building will be ready for the Contractor to occupy by January 15, 2000 or as determined by the Contracting Officer. Prior to that date, mobilization, submittals, and accumulation of materials can occur on site.

Asbestos and lead abatement can then proceed. The spaces occupied by the school (mentioned above) will be available for the Contractor to occupy when the school year ends in June (or as determined by the Contracting Officer). These areas will be available to the Contractor until the start of the new school year in August of 2000 (or as determined by the Contracting Officer.)

1.3 UTILITIES

1.3.1 Payment for Utility Services

See Section 00800 SPECIAL CONTRACT REQUIREMENTS.

1.3.2 Outages

The Contractor shall coordinate all requests for utility outages with the Contracting Officer in writing 14 days prior to date of requested outage:

a. Water, gas, steam, sewer and electrical outages shall be as approved in writing.

b. All utility outages shall be scheduled only on Saturdays, Sundays, or holidays unless specific approval is otherwise received.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION 01010

CONTRACT CONSIDERATIONS
AM #0001

PART 1 GENERAL

1.1 CONTRACTOR ACCESS AND USE OF THE PREMISES

1.1.1 Commencement of Work

The Contractor should duly note that commencement of work as indicated in section 01000 CONSTRUCTION SCHEDULE does not necessarily indicate that the facility will be available for normal construction operations. Reference the remainder of these specifications for phasing, additional contract time, and availability of work criteria.

1.1.2 Station and Activity Regulations

Ensure that Contractor personnel employed on the Station become familiar with and obey Station and Activity regulations. Keep within the limits of the work areas and avenues of ingress and egress. Do not enter restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be clearly marked for identification.

1.1.3 Working Hours

1.1.3.1 Access Allowed

[AM #0001] In facilities where Contractor will be permitted access to selected area inside the occupied facility, regular working hours shall consist of an 8.5 hour period between 7:00 am and 4:30 pm, Monday through Friday, excluding Government holidays unless otherwise specified herein.

1.1.3.2 No Access Allowed

[AM #0001] In facilities where Contractor will not be allowed access inside the occupied facility, regular working hours shall consist of an 8.0 hour period between 3:30 pm and 12:00 am, Monday through Friday, excluding Government holidays unless otherwise specified herein.

1.1.4 Work Outside Regular Hours

Work performed during hours outside of regular hours is subject to Contracting Officer approval. Contractor shall make application 7 calendar days prior to such work to facilitate arrangements to be made by the Government for inspecting work in progress. Application shall give the specific dates, hours, locations, type of work to be performed, contract number and project title.

1.1.5 Utility Cutovers

Contractor shall make effort to exact any required utility cutovers outside of regular working hours to minimize any impact in occupied facilities.

1.2 SPECIAL REQUIREMENTS FOR OCCUPIED BUILDINGS

The work under this contract requires special attention to the scheduling and conduct of the work in connection with existing building operations.

1.2.1 Interruptions

Contractor shall identify on the construction schedule any activity or factor with potential to create interruption to the normal operation of the building.

1.2.2 Life Safety and Egress

During any time the building is occupied, all code requirements for life safety and building egress/evacuation must be maintained unless approved by the Authority Having Jurisdiction.

1.2.3 Security

The existing buildings and their contents must be kept secure at all times. Contractor will provide and install temporary closures as required to maintain physical security of the building and contents as directed by the Contracting Officer.

1.2.4 Noise

The Contractor shall be aware of and recognize the fact that when he is working in occupied building facilities, he should apply conscientious effort to minimize noise in areas where it could be detrimental to building operations (e.g. adjacent to occupied classrooms). If it is judged that normal contractor operations would create noise of a level that would be detrimental to these operations, that portion of the work should be performed outside the hours of building occupancy.

1.2.5 Dust Covers

Contractor shall provide temporary dust covers or protective enclosures to protect any furnishings, equipment or materials that are not required to be relocated during construction in any area. Covers or enclosures shall also be provided to protect existing construction that is to remain. Upon removal of covers, all surfaces shall be vacuumed and dusted, including removal of dust and debris located within space prior to placing temporary dust coverings.

1.2.6 Furnishings and Equipment

In areas where furniture or equipment relocation that will not be performed by the user is required to perform the required work, Contractor shall relocate movable items away from the working area, protect the furniture or equipment, or replace items damaged. These areas shall be photographed or video taped prior to any items being moved. The areas that users will facilitate furniture relocation are identified elsewhere in these specifications. Items shall be relocated to their original position following the completion of the work. Leave attached items in place and protect them from damage, or temporarily disconnect, relocate, protect and reinstall them upon completion of the work. All items must be fully operational as certified by the appropriate authority upon completion of the work.

1.2.7 Conduct and Dress

Workers shall be properly attired at all times. Full length pants (no shorts), shirts (tee-shirt minimum), and proper shoes (no thongs, flip-flops or open toed sandals) are required. These criteria do not release Contractor responsibility from more stringent safety and dress criteria, however. Logos, slogans or other adornment of clothing that could be considered to be offensive to minors are prohibited. No smoking will be permitted in the buildings. Smoking will be permitted only in designated outdoor areas. The contractor shall ensure that all lunch and breaktime debris are contained and removed from the project site at the end of each break or lunch period and disposed of properly. The contractor shall confine his personnel to the area within which the work is being performed. Profanity is strictly forbidden. The utmost courtesy shall be extended to the building occupants at all times. Conversation with occupants shall be limited to and pertain to the work at hand. All privately owned vehicles shall be parked in the contractor storage and staging area. Lights shall be turned off and doors and windows shall be locked after work in buildings following regular work hours.

1.2.8 Use of Building Facilities and Equipment

No items in the facility are to be used by the Contractor's personnel. Brooms, vacuums, cleaning supplies, telephones, restrooms, cafeteria facilities, vending machines, etc. shall not be used by the Contractor's personnel.

1.2.9 Restoration of Occupied Spaces

In the event that work has been performed in occupied spaces outside of regular work hours, the Contractor shall restore the space to its prior, occupiable and usable condition prior to conclusion of the days work. The space shall be available for use without restriction or interference the following day. All tools, supplies, materials, and equipment shall either be removed from the premises, or stored in such a manner as not to interfere with the facilities normal operations, subject to prior approval of the Contracting Officer. All dust and debris shall be removed from occupied spaces prior to the conclusion of work for the day.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

-- End of Section --

SECTION 01200
PROJECT MEETINGS
02/97
AM #0001

PART 1 GENERAL

1.1 PRECONSTRUCTION CONFERENCE

Approximately three weeks after award of the contract and prior to the start of any construction work an authorized representative of the Contracting Officer will schedule and conduct a preconstruction conference. The Contractor's Project Manager, Superintendent and his Quality Control Manager will attend this meeting. The Contractor is encouraged to have an officer of his company and representation from his sub-contractors at this conference. This conference will be held at the location specified by the Contracting Officer's authorized representative.

1.1.1 Start of Construction Work

If the Contractor has submitted the Accident Prevention (Safety) Plan, Quality Control Plan, and Environmental Protection Plan for review prior to this meeting, these may be accepted in toto or accepted with comments at the conference. Construction work will not proceed until after this meeting has been held, these three plans noted above have been accepted and the Notice to Proceed has been received and acknowledged by the Contractor.

1.2 PROGRESS MEETINGS

[AM #0001] Upon mobilization and after the pre-construction meeting, weekly meetings shall be held at the site to review the status and progress of the work, coordinate availability of work areas and phasing, review building security, respond to any concerns and safety requirements of the using agency and any other pertinent information as determined by the Contracting Officer. The Contracting Officer will establish the day of the week and time for the Progress Meetings. The Contractor's Superintendent, Project Manager, and subcontractors currently engaged in the work or anticipated to start work the following week along with the using agency representative shall attend the progress meeting.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --

SECTION 01320

PROJECT SCHEDULE
06/97
AM #0001

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Schedules

Initial Project Schedule; GA. Preliminary Project Schedule; FIO. Periodic Schedule Updates; GA.

Three copies of the schedules showing codes, values, categories, numbers, items, etc., as required.

SD-08 Statements

Qualifications; FIO.

Documentation showing qualifications of personnel preparing schedule reports.

SD-09 Reports

Narrative Report; GA. Schedule Reports; GA.

Three copies of the reports showing numbers, descriptions, dates, float, starts, finishes, durations, sequences, etc., as required.

1.2 QUALIFICATIONS

The Contractor shall designate an authorized representative who shall be responsible for the preparation of all required project schedule reports. This person shall have previously created and reviewed computerized schedules. Qualifications of this individual shall be submitted to the Contracting Officer for review with the Preliminary Project Schedule submission.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS, a Project Schedule as described below shall be prepared. The scheduling of construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project shall also contribute

in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule or scheduling personnel shall result in an inability of the Contracting Officer to evaluate Contractor progress for the purposes of payment. Failure of the Contractor to provide all information, as specified below, shall result in the disapproval of the entire Project Schedule submission and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. In the case where Project Schedule revisions have been directed by the Contracting Officer and those revisions have not been included in the Project Schedule, then the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until revisions to the Project Schedule have been made.

3.3 PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer.

3.3.1 Use of the Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in either the Precedence Diagram Method (PDM) or the Arrow Diagram Method (ADM).

3.3.2 Level of Detail Required

With the exception of the initial and preliminary schedule submission, the Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule.

3.3.2.1 Activity Durations

Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations shall be greater than 20 days).

3.3.2.2 Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long lead

materials and equipment are those materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing.

3.3.2.3 Government Activities

Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: approvals, inspections, utility tie-in, Government Furnished Equipment (GFE) and notice to proceed for phasing requirements.

3.3.2.4 Modification or Claim Number

Any activity that is added or changed by contract modification or used to justify claimed time shall be identified by a mod or claim code that changed the activity. Activities shall not belong to more than one modification or claim item. The modification or claim number of each activity shall be identified by the Mod or Claim Number.

3.3.2.5 Bid Item

All activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one bid item. the bid item for each appropriate activity shall be identified by the Bid Item Code.

3.3.2.6 Phase of Work

All activities shall be identified in the project schedule by the phases of work in which the activity occurs. Activities shall not contain work in more than one phase of work. The project phase of each activity shall be by the unique Phase of Work Code.

3.3.2.7 Category of Work

All Activities shall be identified in the project schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing. The category of work for each activity shall be identified by the Category of Work Code.

3.3.2.8 Feature of Work

All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code.

3.3.3 Scheduled Project Completion

[AM #0001] Delete paragraph.

3.3.3.1 Project Start Date

[AM #0001] Delete paragraph.

3.3.3.2 Constraint of Last Activity

[AM #0001] Delete paragraph.

3.3.3.3 Early Project Completion

[AM #0001] Delete paragraph.

3.3.4 Interim Completion Dates

3.3.4.1 Start Phase

The Contractor shall include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have: a "ES" constraint, a constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

3.3.4.2 End Phase

The Contractor shall include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have: a "LF" constraint, a constraint date equal to the completion date for the project, and a zero day duration.

3.3.4.3 Phase X

The Contractor shall include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5 Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Quality Control report for every in-progress or completed activity and Ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes.

3.3.6 Out-of-Sequence Progress

Activities that have posted progress without predecessors being completed (Out-of-Sequence Progress) will be allowed only on a case-by-case approval of the Contracting Officer. The Contracting Officer may direct that changes in schedule logic be made to correct any or all out-of-sequence work.

3.3.7 Extended Non-Work Periods

Designation of Holidays to account for non-work periods of over 5 days will not be allowed. Non-work periods of over 5 days shall be identified by addition of activities that represent the delays. Modifications to the logic of the project schedule shall be made to link those activities that may have been impacted by the delays to the newly added delay activities.

3.3.8 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.4 PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1 Preliminary Project Schedule Submission

The Preliminary Project Schedule, defining the Contractor's planned operations for the first 60 calendar days shall be submitted for approval within 20 calendar days after Notice to Proceed is acknowledged. The approved preliminary schedule shall be used for payment purposes not to exceed [AM #0001] 90 calendar days after Notice to Proceed.

3.4.2 Initial Project Schedule Submission

The Initial Project Schedule shall be submitted for approval within 40 calendar days after Notice to Proceed. The schedule shall provide a reasonable sequence of activities which represent work through the entire project and shall be at a reasonable level of detail.

3.4.3 Periodic Schedule Updates

Based on the result of progress meetings, specified in "Periodic Progress Meetings," the Contractor shall submit periodic schedule updates. These submissions shall enable the Contracting Officer or to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgement of the Contracting Officer or authorized representative, is necessary for verifying the contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

3.4.4 Standard Activity Coding Dictionary

The Contractor shall submit, with the Initial Project Schedule, a coding scheme that shall be used throughout the project for all activity codes contained in the schedule. The coding scheme submitted shall list the values for each activity code category and translate those values into project specific designations. For example, a Responsibility Code Value, "ELE", may be identified as "Electrical Subcontractor." Activity code values shall represent the same information throughout the duration of the contract. Once approved with the Initial Project Schedule submission, changes to the activity coding scheme must be approved by the Contracting Officer.

3.5 SUBMISSION REQUIREMENTS

The following items shall be submitted by the Contractor for the initial submission, and every periodic project schedule update throughout the life of the project:

3.5.1 Schedule

Three copies of the project schedule shall be provided.

3.5.2 Narrative Report

A Narrative Report shall be provided with each update of the project schedule. This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include: a description of activities along the 4 most critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken.

3.5.3 Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the schedule submission. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number and then sorted according to Early Start Date. For completed activities the Actual Start Date shall be used as the secondary sort.

3.5.4.2 Logic Report

A list of Preceding and Succeeding activities for every activity in ascending order by activity number and then sorted according to Early Start Date. For completed activities the Actual Start Date shall be used as the secondary sort.

3.5.4.3 Total Float Report

A list of all activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates.

3.5.4.4 Earnings Report

A compilation of the Contractor's Total Earnings on the project from the Notice to Proceed until the most recent Monthly Progress Meeting. This report shall reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and Contracting Officer at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining Contractor Payment. Activities shall be grouped by bid item and sorted by activity numbers. This report shall: sum all activities in a bid item and provide a bid item percent; and complete and sum all bid items to provide a total project percent complete. The printed report shall contain, for each activity: Activity Number, Activity Description, Original Budgeted Amount, Total Quantity,

Quantity to Date, Percent Complete (based on cost), Earnings to Date.

3.5.5 Network Diagram

The network diagram shall be required on the initial schedule submission and on quarterly schedule update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity or event number, description, duration, and estimated earned value shall be shown on the diagram.

3.5.5.2 Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3 Critical Path

The critical path shall be clearly shown.

3.5.5.4 Banding

Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly onsite meeting or other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

3.6.1 Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

3.6.2 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 4 working days after the monthly progress meeting.

3.6.3 Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Contracting Officer. The following minimum set of items which the Contractor shall address, on an activity by activity basis, during each progress meeting.

3.6.3.1 Start and Finish Dates

The Actual Start and Actual Finish dates for each activity currently in-progress or completed activities.

3.6.3.2 Time Completion

The estimated Remaining Duration for each activity in-progress. Time-based progress calculations must be based on Remaining Duration for each activity.

3.6.3.3 Cost Completion

The earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

3.6.3.4 Logic Changes

All logic changes pertaining to Notice to Proceed on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary, and 3) a schedule which does not represent the actual prosecution and progress of the work.

3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract completion date, he shall furnish such justification, project schedule data and supporting evidence as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals.

3.7.1 Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in

effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be a cause for a time extension to the contract completion date.

3.7.2 Submission Requirements

The Contractor shall submit a justification for each request for a change in the contract completion date of under 2 weeks based upon the most recent schedule update at the time of the Notice to Proceed or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

a. A list of affected activities, with their associated project schedule activity number.

b. A brief explanation of the causes of the change.

c. An analysis of the overall impact of the changes proposed.

d. A sub-network of the affected area.

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

3.7.3 Additional Submission Requirements

For any requested time extension of over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request.

3.8 DIRECTED CHANGES

If Notice to Proceed (NTP) is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

-- End of Section --

SECTION 01560

[AM #0001] TEMPORARY SAFETY CONTROLS
01/1998
AM #0001

PART 1 GENERAL

1.1 SUMMARY

This section covers safety requirements that are in addition to those specified in COE EM 385-1-1.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (COE)

COE EM 385-1-1	(Current Edition) Safety and Health Requirements Manual

CODE OF REGULATIONS (CFR)

29 CFR 1910	Hazardous Waste Operation and Emergency Response

1.3 SAFETY MEASURES

1.3.1 OSHA Requirements

The Contractor shall comply with Occupational Safety and Health Act (OSHA) Standards. OSHA Standards are subject to change. It is the Contractor's responsibility to maintain familiarity with OSHA Standards which are current.

1.3.2 Confined Space Program

A confined space means a space that: (1) is large enough and so configured that an employee can bodily enter and perform assigned work; and (2) has limited or restricted means for entry or exit (for example tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces hat may have limited means of entry), and (3) is not designed for continuous employee occupancy. A permit-required confined space means a confined space that has one or more of the following characteristics: (1) contains or has a potential to contain a hazardous atmosphere, (2) contains a material that has the potential for engulfing an entrant; (3) has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or (4) contains any other recognized serious safety or health hazard.

1.3.2.1 Written Confined Space Program

The Contractor shall develop a written Confined Space Program in accordance with 29 CFR 1910.146 which shall include a measure of identification and classification of all confined spaces as either non-permit and permit required spaces. The following elements, as a minimum, shall be included along with any additional factors the contractor may identify:

a. Procedures to identify confined spaces and determine if a permit is required.

b. Identification of the individual(2) responsible for administering the Contractor's Confined Space Program. This shall include the name and qualification of the persons and their specific role and responsibility in administering this program: i.e., person(s) who will issue permits, conduct atmospheric testing, identification of entry supervisors, authorized entrants, and attendants, etc.

c. Identification of monitoring equipment to be used for atmospheric testing; i.e., oxygen content, combustible, and toxics; of the confined space prior to entry and during work. This shall include type of equipment, the approval for use in hazardous environments and calibration requirements.

d. Development of an air monitoring plan for the confined space which identifies the specific type of monitoring to be conducted, when, how often, and by whom conducted. A log shall be developed and maintained for documentation of the following data: date, time, equipment used, type of air monitoring, date and time of equipment calibration, and person conducting the air monitoring.

e. Detailed description of the confined space permit system including a copy of a permit, instructions for completion and issuance of the permit, and the person responsible for the permits.

f. Training requirements and documentation of the training as required for supervisor, entrants, attendants and stand-by personnel.

g. Procedures to ensure a safe entry at all times into the confined space including those which address entry prior to the permit determination.

h. Documentation of the elimination of the hazards prior to entry.

i. Communication procedures, to include working in high-noise and/or toxic environments, shall be established to ensure effective employee communication at all times with minimal interference from wearing of PPE or high noise levels.

j. Procedure for limiting unauthorized access to the space.

k. Emergency procedures to include emergency entry, escape and rescue procedures, communication, and any personnel protective equipment necessary.

l. Description of emergency rescue procedures including simulated drills, personnel protective equipment necessary, and the retrieval system to be used.

m. Description of the ventilation system to be used for confined space work to ensure adequate ventilation. This shall include a description of the design, the measure of determining efficiency and the

proper installation of the ventilation system.

n. Measure of dust suppression to be used to minimize the potential toxic atmosphere.

o. Description of methods used to inspect personnel protective equipment prior to use in the confined space.

p. Description of the method of inspection to ensure conditions within the confined space have not changed since the onset of work and the person responsible for these inspections.

1.3.3 Electrical Work

Electrical work will not be performed on or near energized lines or equipment unless specified in the plans and specifications.

1.3.3.1 De-Energizing Lines And Equipment

Upon request by the Contractor, arrangements will be made for de-energizing lines and equipment so that work may be performed. All outages shall be requested through the authorized representative of the Contracting Officer a minimum of 21 days, unless otherwise specified, prior to the beginning of the requested outages. Dates and duration will be specified.

1.3.3.2 Work Performed On Energized Lines

Upon approval of the Contracting Officer's representative, the following work may be performed with the lines energized using certified hot line equipment, on lines above 600 volts, when the following conditions have been met:

a. Work below the conductors no closer than the clearance required in COE EM 385-1-1 from the energized conductors.

b. Setting and connection of new pretrimmed poles in energized lines which do not replace an existing pole.

c. Setting and removing transformers or other equipment on poles.

d. Installation or removal of hot line connectors, jumpers, dead-end insulators for temporary isolation, etc., which are accomplished with hot line equipment from an insulated bucket truck.

1.3.3.3 Work Plan for Energized Lines

The Contractor shall submit a plan, in writing, describing his method of operation and the equipment to be used on energized lines. Proper certification from an approved source of the safe condition of all tools and equipment will be provided with the plan. The work will be planned and scheduled so that proper supervision is maintained. The Contractor will review his plan with the Contracting Officer's representative prior to being granted permission to perform the work.

1.3.3.4 Lines Greater Than 600 Volts

No work on lines greater than 600 volts will be performed from the pole or without the use of an insulated bucket truck.

1.3.3.5 Overbuilt Lines

No work will be done on overbuilt lines while underbuilt lines are energized, except for temporary isolation and switching in accordance with subparagraph "Work Performed On Energized Lines" hereinbefore.

1.3.4 Rollover Protective Structures (ROPS)

1.3.4.1 Rollers and Compactors

R OPS for rollers and compactors will be certified to meet SAE requirement J1040C.

1.3.4.2 Pulverizers

ROPS, as required by paragraph 16.B.12, COE EM 385-1-1, includes self-propelled pulverizers.

1.3.5 Radiation Permits or Authorizations

Contractors contemplating the use of radioactive materials or radiation producing equipment while performing work on this contract must obtain written authorization from the Department of the Army or Department of the Air Force, as applicable.

a. A 45-day lead time should be programmed for obtaining this written authorization.

b. When requested, the Contracting Officer's Authorized Representative will assist Contractor in obtaining the required permit or authorization.

1.3.6 Self-Propelled Elevating Work Platforms

All self-propelled elevating work platforms will be designed, constructed, maintained, used, and operated in accordance with the guidance provided in American National Standard for Self-Propelled Elevating Work Platforms (ANSI A92.6-1979) together with any amendments which may be in force at time contract is awarded.

1.3.7 Supporting Systems

To COE EM 385-1-1, 23.D.01, add "Supporting systems, i.e., piling, cribbing, shoring, etc., shall be designed by a qualified person to meet accepted engineering requirements. Submit supporting systems construction details and design calculations, which bear the seal of a licensed professional engineer, for Contracting Officer review."

1.3.8 Telephone

A telephone or equivalent means to immediately initiate emergency response services shall be accessible at the job site at all times while work is underway.

1.3.9 Language

For each work group that has employees who do not speak English, the Contractor will provide a bilingual foreman who is fluent in English and in the language of the workers. The Contractor will implement the requirements of COE EM 385-1-1, paragraphs 01.B.01, 01.B.02, and 01.C.02

through these foremen.

1.3.10 Doctor's Report

The Contractor shall provide, in the event of any Contractor/subcontractor employee lost time injury accident, a doctor's report of examination which states the number of days that the physician recommends the employee recuperate before returning for work. This requirement shall be in addition to other reporting requirements and may, in specific instances, be waived by the Contracting Officer.

1.3.11 Fall Protection

A passive means of fall protection, such as guardrails or catch platforms, will be used on all roofs or wherever the fall distance exceeds 6 feet, in accordance with the requirements of Contract Clause "Accident Prevention" and the safety manual, COE EM 385-1-1.

1.4 CONSTRUCTION/ERECTION SUPPORTS AND LOADS

1.4.1 Lateral Stability

The lateral stability of this structure is dependent on the total completion of all interconnected structural roof, wall, and floor framing/decking systems. The Contractor shall provide and adequately install and maintain all temporary supports such as temporary guys, lateral bracing, falsework, cribbing, and any other type structural supports required for a safe erection operation to maintain stability of the structure until all structural systems are interconnected as required by the contract plans and specifications.

1.4.2 Temporary Support Data

At least 60 days prior to the start of vertical construction and prior to the commencement of structural steel, concrete or masonry walls, elevated floors, and roofs, the Contractor shall submit detailed drawings, catalog data and calculations for all temporary supports as described in paragraph above, which will be used on this contract. These detailed drawings, catalog data, and calculations shall be prepared and certified by a Registered Structural Engineer. The minimum for vertical loads shall be actual dead loads plus a minimum live load of 25 psf, but use higher live loads if needed due to the Contractor's plan of erection. No load reductions will be allowed. Bracing shall be designed for a minimum wind load of 20 psf. Wind loadings will not be reduced from the design wind load provided and all temporary supports will be designed with a minimum safety factor of 1.5.

1.4.3 Installation And Maintenance

After approval of the temporary support system and calculations, the Contractor shall install and maintain the temporary structural support system in strict compliance with the approved drawings. Daily inspections will be conducted by the Contractor's Quality Control Inspector to assure all supports are installed as approved and properly maintained.

1.4.4 Architectural Or Structural Precast Or Tilt-Up Wall Panels

Temporary supports for architectural or structural precast or tilt-up wall panels will be designed as indicated above. Pipe or other approved bracing

shall have lateral cross bracing between each pipe support. Tension guy wires or cables will not be acceptable. Bolted or welded connections into the concrete floors and concrete wall panels will be designed with a safety factor of 3.0. Immediately after erecting each concrete wall panel, the bottom of the panel shall be secured by welding the weld plates or by bolting in place. Panels will not be temporarily placed in a vertical position until they are ready to be erected in their final position. If possible, all structural steel will be erected prior to erection of wall panels. If not, the structural steel will be commenced immediately after the last wall panel is set in the smallest section/bay possible. The Contractor shall not start a new wall section/bay until the structural steel is completed in the last section/bay.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION 01700

CONTRACT CLOSEOUT
01/1997
AM #0001

PART 1 GENERAL

1.1 PAYMENT

Contract closeout activities such as, but not limited to, operation and maintenance manuals, record drawings, warranty requirements, equipment warranty identification tags, and inventories, payrolls, and shop drawing submittals, are subsidiary activities of the contract work; separate payment will not be made for any activity unless otherwise specified. Final contract payment will not be made until completion and approval of all contract closeout activities.

[AM #0001] "Testing of Heating and Air Conditioning Systems" of Section 01000 has a value to the Government of 10% of the value of the equipment to be tested. The contractor will assign that amount to any equipment that will require testing after substantial completion pursuant to the above referenced specification paragraph.

1.2 OPERATION AND MAINTENANCE MANUALS

The Contractor shall be responsible for the preparation, coordination, execution and submittal of all operation and maintenance manuals (O & M Manuals), including spare parts lists, special tools, inventories of equipment manuals and maintenance instructions, and shall conduct all training for operating and service personnel. Operation and maintenance manuals shall cover all system installations provided in this contract and shall be in sufficient detail to facilitate normal maintenance and troubleshooting by persons with minimum experience with the installed equipment.

1.2.1 Submittal Requirements

All of the above listed items required in the technical specifications shall be submitted to the Contracting Officer not less than 90 days prior to the scheduled contract completion date. Fully developed and approved operation and maintenance manuals shall be provided 30 days prior to scheduling training for operating and service personnel. The Contractor shall coordinate the content of each instruction period required in the technical specifications with the Contracting Officer's Representative prior to the actual start of the training period.

1.2.1.1 Video taping of Training for Operating and Service Personnel

Each instruction or training period as discussed above, shall be video taped in VHS FORMAT by the Contractor. The taping shall include the entire session(s). The original video tape(s) shall be labeled and turned over to the Contracting Officer. The video camera and tapes utilized by the Contractor, shall be of a quality to enable clear and understandable playbacks of the recorded events.

1.2.1.2 Draft O & M Manuals

On those systems where complete and comprehensive operation and maintenance manuals cannot be fully developed until the system(s) is checked, tested, and/or balanced, and the checking, testing, and/or balancing has not been done when submittals are required, a proposed draft of those system manual(s) shall be submitted. 10 percent of the each subsequent scheduled progress payment will be retained until the complete O & M Manuals submittal package have been submitted and approved. Submit fully developed O & M Manuals of the drafts for approval after the systems have been checked, tested, and/or balanced.

1.2.1.3 Commencement of Warranty of Construction

Failure to submit all specified O & M manuals, spare parts listings, spare parts, special tools, inventories of installed property, and training video tapes in a timely manner will be considered as delaying substantial completion of the work. Commencement of warranty under the Contract Clause WARRANTY OF CONSTRUCTION will not occur until all these items are delivered and approved by the Contracting Officer, but not earlier than the date of final acceptance of the work by the Government. When the O & M Manuals with drafts are approved they will not constitute a reason for delaying the start of the warranty period.

1.2.2 Government Possession of Work

The Government may take possession of any completed or partially completed work as provided for under Contract Clause entitled "USE AND POSSESSION PRIOR TO COMPLETION." If the installed equipment and/or systems thereto, have not been accepted by the Government due to the Contractor's failure to submit the above specified items, the Contractor shall operate and maintain such plant or system at no additional cost to the Government until such time that the specified items have been received, approved and any subsequent testing, check-out and/or training has been completed.

1.3 PREPARATION AND SUBMISSION OF OPERATION AND MAINTENANCE MANUALS

This paragraph establishes general requirements for the preparation and submission of equipment operating, maintenance, and repair manuals as called for in the various sections of the specifications. Specific instruction(s) relating to a particular system or piece of equipment shall be incorporated into the manuals in accordance with the applicable technical specification.

1.3.1 General Requirements

1.3.1.1 Hard Cover Binders

The manuals shall be permanently bound and have a hard cover. The following identification shall be inscribed on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUAL:" and the name, building number, location, and indication of utility or systems covered. Manuals shall be approximately 8-1/2 by 11 inches with large sheets folded in and capable of being easily pulled out for reference. All manuals for a single facility must be similar in appearance.

1.3.1.2 Warning Page

A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive

materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

1.3.1.3 Title Page

The title page shall show the name of the preparing firm (designer or contractor) and the date of publication.

1.3.1.4 Table of Contents

Provide in accordance with standard commercial practice.

1.3.2 Equipment Operating, Maintenance, and Repair Manuals

1.3.2.1 General

Separate manuals shall be provided for each utility system as defined hereinafter. Manuals shall be provided in the number of copies specified in the applicable technical section. Manuals shall include, in separate sections, the following information for each item of equipment:

a. Performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates. Marked-up catalogs or catalog pages do not satisfy this requirement. Performance information shall be presented as concisely as possible and contain only data pertaining to equipment actually installed.

b. Catalog cuts showing application information.

c. Installation information showing minimum acceptable requirements.

d. Operation and maintenance requirements. Include adequate illustrative material to identify and locate operating controls, indicating devices and locations of areas or items requiring maintenance.

(1) Describe, in detail, starting and stopping procedures for components, adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions.

(2) Maintenance instructions describing the nature and frequency of routine maintenance and procedures to be followed. Indicate any special tools, materials, and test equipment that may be required.

e. Repair information including diagrams and schematics, guidance for diagnosing problems, and detailed instructions for making repairs. Provide troubleshooting information that includes a statement of the indication or symptom of trouble and the sequential instructions necessary. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings.

f. Parts lists and names and addresses of closest parts supply agencies.

g. Names and addresses of local manufacturers representatives.

1.3.2.2 Facility Heating Systems

Information shall be provided on the following equipment: Boilers, water

treatment, chemical feed pumps and tanks, converters, heat exchangers, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

1.3.2.3 Air-Conditioning Systems

Provide information on chillers, packaged air-conditioning equipment, towers, water treatment, chemical feed pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

1.3.2.4 Temperature Control and HVAC Distribution Systems

a. Provide the information described for the following equipment:

Valves, fans, air handling units, pumps, boilers, converters, and heat exchangers, chillers, water cooled condensers, cooling towers, and fin-tube radiation.

b. Provide all information described for the following equipment:

Control air compressors, control components (sensors, controllers, adapters, and actuators), and flow measuring equipment.

1.3.2.5 Central Heating Plants

Provide the information described for the following equipment: Boilers, converters, heat exchangers, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment, de-aerators, tanks (flash, expansion, return water, etc.), water softeners, and valves.

1.3.2.6 District Heating Distribution Systems

Provide the information described for the following equipment: Valves, fans, pumps, converters and heat exchangers, steam traps, tanks (expansion, flash, etc.) and piping systems.

1.3.2.7 Exterior Electrical Systems

Information shall be provided on the following equipment: Power transformers, relays, reclosers, breakers, and capacitor bank controls.

1.3.2.8 Interior Electrical Systems

Information shall be provided on the following equipment: Relays, motor control centers, switchgear, solid state circuit breakers, motor controller, and EPS lighting systems, control systems (wire diagrams and troubleshooting flow chart), and special grounding systems.

1.3.2.9 Energy Management and Control System

The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

1.3.2.10 Fire Protection Systems

Information shall be provided on the following equipment: Alarm valves,

manual valves, regulators, foam and gas storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

1.3.2.11 Fire Detection Systems

The maintenance manual shall include description of maintenance for all equipment, including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

1.3.2.12 Plumbing Systems

Information shall be provided on the following equipment: Water heaters, valves, pressure regulators, backflow preventors, piping materials, and plumbing fixtures.

1.3.2.13 Liquid Fuels Systems

Information shall be provided on the following equipment: Tanks, automatic valves, manual valves, filter separators, pumps, mechanical loading arms, nozzles, meters, electronic controls, electrical switch gear, and fluidic controls.

1.3.2.14 Cathodic Protection Systems

Information shall be provided on the following material and equipment: Rectifiers, meters, anodes, anode backfill, anode lead wire, insulation material and wire size, automatic controls (if any), rheostats, switches, fuses and circuit breakers, type and size of rectifying elements, type of oil in oil-immersed rectifiers, and rating of shunts.

1.3.2.15 Generator Installations

Information shall be provided on the following equipment: Generator sets, automatic transfer panels, governors, exciters, regulators, starting systems, switchgear, and protective devices.

1.3.2.16 Miscellaneous Systems

Information shall be provided on the following: Communication and ADP systems, security and intrusion alarm, elevators, material handling, active solar, photovoltaic, and other similar type special systems not otherwise specified.

1.4 RECORD DRAWINGS

Record drawings shall be a record of the construction as installed and completed by the Contractor. They include all the information shown on the contract set of drawings and a record of all deviations, modifications, or changes from those drawings, however minor, which were incorporated in the work; all additional work not appearing on the contract drawings; and all changes which are made after final inspection of the contract work and the location and size of all uncharted existing utilities encountered. In event the Contractor accomplishes additional work which changes the as-built conditions of the facility after submission of the record drawings, the Contractor shall furnish revised and/or additional drawings, hard copy and CADD files, as required to depict as-built conditions. The requirements for these additional drawings will be the same as for the record drawings included in the original submission. CADD files shall conform to the CADD requirements of the Contracting Officer and shall be

demonstrated to work on the designated Government computer systems. CADD files shall be error- and virus-free.

1.4.1 Fire Protection/Detection Record Drawings

The fire protection/detection record drawings will be a marked-up version of the fire protection/detection shop drawings. Submit these record drawings on full-size reproducible sheets and CADD files. CADD files for the Base shall conform to the Base's requirements and for the District, Micro Station CADD files, without any pre/post alteration required.

1.4.2 Submittals of Preliminary and Final Record Drawings

1.4.2.1 Contracts Having Multiple Items of Work

A copy of the preliminary record drawings which the Contractor has reproduced from the approved preliminary record drawing sepias, shall be furnished to the Contracting Officer's representative at the time of the final inspection on each interim item of work.

1.4.2.2 Contracts Having a Single Item of Work and the Chronologically Last Item of Work on Contracts Having Multiple Items of Work

At the time of final inspection on the last or only item of work, the Contractor shall deliver a copy of the approved preliminary record drawing sepias and blue lines to the Contracting Officer's Representative.

1.4.2.3 All Contracts, Final Record Drawings

Final record drawing submittal requirements are as stated later in this specification.

1.4.3 Preliminary Record Drawings

The Contractor shall mark up both a sepia set and a blue line set of prints to show as-built conditions. These two sets, hereafter called preliminary record drawings, or singly, sepias or blue lines, shall be kept current and available on the jobsite at all times, except as noted below. A member of the Contractor's Quality Control Organization shall be assigned responsibility for the maintenance and currency of the preliminary record drawings. This assignment and any reassignment of duties concerning the maintenance of the record drawings shall be promptly reported to the Contracting Officer's representative for approval. All changes from the contract drawings which are made in the work or additional information which might be uncovered in the course of construction, including uncharted utilities, shall be accurately and neatly recorded as they occur by means of details and notes. All changes and/or required additions to the preliminary record drawings shall be clearly identified in a color contrasting to blue and which is compatible with reproduction of the preliminary record drawing sepias. During periods when the sepias are being copied and are therefore not available at the jobsite, the Contractor shall continue posting all required data to the blue lines. The Contractor shall minimize the time that the sepias are away from the jobsite and he shall update them with all as-built data immediately upon their return. The sepias and blue lines will be jointly inspected for accuracy and completeness by the Contracting Officer's representative and the assigned representative of the Contractor's Quality Control Organization prior to submission of each monthly pay estimate. (See paragraph, "Withholding for

Preliminary Record Drawings.") The record drawings shall show the following information, but not be limited thereto:

a. The location and description of any utility lines or other installation of any kind or description known to or found to exist within the construction area. The location of exterior utilities includes actual measured horizontal distances from utilities to permanent facilities/ features. These measurements shall be within an accuracy range of mm6 inches and shall be shown at sufficient points to permit easy location of utilities for future maintenance purposes. Measurements shall be shown for all change of direction points and all surface or underground components such as valves, manholes, drop inlets, cleanouts, meter, etc. The general depth range of each underground utility line shall be shown (i.e., 3 to 4 feet in depth). The description of exterior utilities includes the actual quantity, size, and material of utility lines.

b. The location and dimensions of any changes within the building or structure.

c. Correct grade or alinement of roads, structures or utilities if any changes were made from contract drawings.

d. Correct elevations if changes were made in site grading.

e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

f. The topography and grades of all drainage installed or affected as a part of the project construction.

g. Options

Where contract drawings or specifications allow options, only the option selected for construction shall be shown on the record drawings.

1.4.3.1 Blue Line or Black Line Prints

Blue line or black line prints shall be full size, 28" by 40" image on 30" by 42" sheet. All blue or black line prints shall exhibit good readable print with clear, sharp, dark lines, and shall not be smeared, faded, double imaged, or have torn or ragged edges.

1.4.3.2 Prefinal Inspection For Each Item of Work

As part of the prefinal inspection for each item of work, the preliminary record drawings will be reviewed. They shall comply with this specification prior to scheduling the final inspection, and/or prior to substantial completion of the item of work.

1.4.3.3 Preliminary Record Drawing Final Submittal

Prior to scheduling the final acceptance inspection of the last or only bid schedule item of work, the preliminary record drawings shall be completed and delivered to the Contracting Officer's Representative for review and approval. If upon review, the drawings are found to contain errors and/or omissions, they will be returned to the Contractor for corrections.

Failure of the Contractor to make timely delivery of the preliminary record drawings on any or all items of work will be cause for the Government to delay substantial completion and to assess liquidated damages in accordance with the terms and conditions of the contract.

1.4.3.4 Withholding for Preliminary Record Drawings

Failure by the Contractor to maintain current and satisfactory preliminary record drawings in accordance with these requirements will result in withholding from progress payments 10 percent of the progress payment amount. This unearned amount will be indicated on monthly payment estimates until the Contractor has fulfilled these contract requirements.

1.4.4 Final Record Drawings

Upon approval of the preliminary record drawings, including the fire protection/detection shop drawings, the Contractor shall prepare one additional set, marked in the same color(s) as the preliminary sets, and submit these three sets (at least one shall be a reproducible) of final, corrected record drawings to the Contracting Officer. Include CADD files for Contractor-original preliminary record drawings that were drawn using CADD such as subcontractor submittals (e.g. fire protection) and approved Contractor's solutions to problems. CADD files shall conform to the CADD requirements of the Contracting Officer, have been demonstrated to work on the designated Government computer systems, and be error- and virus-free. Upon approval and acceptance of final record drawing sets, the Contracting Officer will distribute the 3 copies as follows:

a. one reproducible copy will be furnished to the customer within 30 days of completion of construction;

b. one copy will be retained by the Corps of Engineers' field office; and

c. one copy will be forwarded to the designer for use in updating the CADD files.

1.5 ADDITIONAL WARRANTY REQUIREMENTS

The warranty requirements specified in this paragraph are in addition to those specified in the Contract Clause WARRANTY OF CONSTRUCTION in Section 00700 CONTRACT CLAUSES.

1.5.1 Performance Bond

It is understood that the Contractor's Performance Bond will remain effective throughout the life of all warranties and warranty extensions. This paragraph is applicable to the Contractor's Warranty of Construction only and does not apply to manufacturers' warranties on equipment, roofing, and other products.

(a) In the event the Contractor or the Contractor's designated representative fails to commence and diligently pursue any work required under the Warranty of Construction Paragraph within a reasonable time after receipt of written notification pursuant to the requirements thereof, the Contracting Officer shall have a right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it

assumed under the Performance Bond, the Contracting Officer shall have the work performed by others, and after completion of the work, shall make demand for reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

(b) Warranty repair work which arises to threaten the health or safety of personnel, the physical safety of property or equipment, or which impairs operations, habitability of living spaces, etc., will be handled by the Contractor on an immediate basis as directed verbally by the Contracting Officer or the Contracting Officer's authorized representative. Written verification will follow verbal instructions. Failure of the Contractor to respond as verbally directed will be cause for the Contracting Officer or the Contracting Officer's authorized representative to have the warranty repair work performed by others and to proceed against the Contractor as outlined in the paragraph (a) above.

1.5.2 Pre-Warranty Conference

Prior to contract completion and at a time designated by the Contracting Officer or Contracting Officer's authorized representative, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of Contract Clause WARRANTY OF CONSTRUCTION. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer or Contracting Officer's authorized representative for the execution of the construction warranty shall be established/reviewed at this meeting.

In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor will furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue warranty work action on behalf of the Contractor. This single point of contact will be located within the local service area of the warrantied construction, will be continuously available, and will be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of Contractor's responsibilities in connection with Contract Clause WARRANTY OF CONSTRUCTION.

1.5.3 Equipment Warranty Identification Tags

The Contractor shall provide warranty identification tags on all equipment installed under this contract. Tags and installation shall be in accordance with the requirements of Paragraph: EQUIPMENT WARRANTY IDENTIFICATION TAGS.

1.6 EQUIPMENT WARRANTY IDENTIFICATION TAGS

1.6.1 General Requirements

The Contractor shall provide warranty identification tags on all Contractor and Government furnished equipment which he has installed.

1.6.1.1 Tag Description and Installation

The tags shall be similar in format and size to the exhibits provided by this specification, they shall be suitable for interior and exterior

locations, resistant to solvents, abrasion, and to fading caused by sunlight, precipitation, etc. These tags shall have a permanent pressure-sensitive adhesive back, and they shall be installed in a position that is easily (or most easily) noticeable. Contractor furnished equipment that has differing warranties on its components will have each component tagged.

1.6.1.2 Sample Tags

Sample tags shall be submitted to the Contracting Officer's Authorized Representative for review and approval. These tags shall be filled out representative of how the Contractor will complete all other tags.

1.6.1.3 Tags for Warranted Equipment

The tag for this equipment shall be similar to the following. Exact format and size will be as approved by the Contracting Officer's Authorized Representative. The Contractor warranty expires (warranty expiration date) and the final manufacturer's warranty expiration dates will be determined as specified by the Paragraph "WARRANTY OF CONSTRUCTION."

EQUIPMENT WARRANTY CONTRACTOR FURNISHED EQUIPMENT
MFG_____ MODEL NO._____
SERIAL NO._____
CONTRACT NO._____
CONTRACTOR NAME_____
CONTRACTOR WARRANTY EXPIRES_____
MFG WARRANTY(IES) EXPIRE_____

EQUIPMENT WARRANTY GOVERNMENT FURNISHED EQUIPMENT
MFG_____ MODEL NO._____
SERIAL NO._____
CONTRACT NO._____
DATE EQUIP PLACED IN SERVICE_____
MFG WARRANTY(IES) EXPIRE_____

1.6.1.4 Duplicate Information

If the manufacturer's name (MFG), model number and serial number are on the manufacturer's equipment data plate and this data plate is easily found and fully legible, this information need not be duplicated on the equipment warranty tag.

1.6.2 Execution

The Contractor will complete the required information on each tag and install these tags on the equipment by the time of and as a condition of final acceptance of the equipment. The Contractor will schedule this activity in the Contractor progress reporting system. The final acceptance inspection is scheduled based upon notice from the Contractor, thus if the Contractor is at fault in this inspection being delayed, the Contractor will, at the Contractor's own expense, update the in-service and warranty expiration dates on these tags.

1.6.3 Payment

The work outlined above is a subsidiary portion of the contract work, and has a value to the Government approximating 5% of the value of the Contractor furnished equipment. The Contractor will assign up to that amount, as approved by the Contracting Officer's Authorized Representative.

1.6.4 Equipment Warranty Tag Replacement

Under the terms of this contract, the Contractor's warranty with respect to work repaired or replaced shall run for one year from the date of repair or replacement. Such activity shall include an updated warranty identification tag on the repaired or replaced equipment. The tag shall be furnished and installed by the Contractor, and shall be identical to the original tag, except that the Contractor's warranty expiration date will be one year from the date of acceptance of the repair or replacement.

1.7 INVENTORY OF CONTRACTOR FURNISHED AND INSTALLED EQUIPMENT

A list of equipment or units of equipment that require electrical power or fuel, or may require removal or replacement such as AHUs, fans, air conditioners, compressors, condensers, boiler, thermal exchangers, pumps, cooling towers, tanks, fire hydrants, sinks, water closets, lavatories, urinals, shower stalls, and any other large plumbing fixtures, light fixtures, etc., shall be made and kept up to date as installed. The list shall be reviewed periodically by the Government to insure completeness and accuracy. Partial payment will be withheld for equipment not incorporated in the list. List shall include on each item as applicable: Description, Manufacturer, Model or Catalog No., Serial No., Input (power, voltage, BTU, etc.), Output (power, voltage, BTU, tons, etc.), Size or Capacity (tanks), and net inventory costs; any other data necessary to describe item and shall list all warrantors and warranty periods for each item of equipment. Final list shall be turned over to the Authorized Representative of the Contracting Officer at the time of the Contractor's quality control completion inspection.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION 08700

BUILDERS' HARDWARE
03/96
AM #0001

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 283	(1991) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen
ASTM F 883	(1990) Padlocks

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA-01	(Effective thru Jun 1998) Directory of Certified Locks & Latches
BHMA-02	(Effective thru Jul 1998) Directory of Certified Door Closers
BHMA-03	(Effective thru Aug 1998) Directory of Certified Exit Devices
BHMA ANSI/BHMA A156.1	(1988) Butts and Hinges
BHMA ANSI/BHMA A156.2	(1989) Bored and Preassembled Locks and Latches
BHMA ANSI/BHMA A156.3	(1994) Exit Devices
BHMA ANSI/BHMA A156.4	(1992) Door Controls - Closers
BHMA ANSI/BHMA A156.5	(1992) Auxiliary Locks & Associated Products
BHMA ANSI/BHMA A156.6	(1994) Architectural Door Trim
BHMA ANSI/BHMA A156.7	(1988) Template Hinge Dimensions
BHMA ANSI/BHMA A156.8	(1994) Door Controls - Overhead Stops and Holders
BHMA ANSI/BHMA A156.13	(1994) Mortise Locks & Latches
BHMA ANSI/BHMA A156.15	(1995) Closer Holder Release Devices

BHMA ANSI/BHMA A156.16	(1989) Auxiliary Hardware
BHMA ANSI/BHMA A156.17	(1993) Self Closing Hinges & Pivots
BHMA ANSI/BHMA A156.18	(1993) Materials and Finishes
BHMA ANSI/BHMA A156.20	(1989) Strap and Tee Hinges and Hasps
BHMA ANSI/BHMA A156.21	(1989) Thresholds

DOOR AND HARDWARE INSTITUTE (DHI)

DHI-03	(1989) Keying Systems and Nomenclature
DHI-04	(1976) Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames
DHI-05	(1990) Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames
DHI-A115.IG	(1994) Installation Guide for Doors and Hardware
DHI A115-W	(Varies) Wood Door Hardware Standards (Incl All5-W1 thru A115-W9)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80	(1995) Fire Doors and Windows
NFPA 101	(1997) Safety to Life from Fire in Buildings and Structures
NFPA 105	(1993) Installation of Smoke-Control Door Assemblies

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Hardware and Accessories; FIO.

Manufacturer's descriptive data, technical literature, and installation instructions. Spare parts data for locksets, exit devices, closers, electric locks, electric strikes, electro-magnetic closer holder release devices, and electric exit devices, after approval of the detail drawings, and not later than 1 month prior to the date of beneficial occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of supply.

SD-04 Drawings

Hardware Devices; GA.

Detail drawings for electrical hardware devices showing complete wiring and schematic diagrams and other details required to demonstrate proper function of units.

SD-07 Schedules

Hardware Schedule; GA.

Hardware schedule listing all items to be furnished. The schedule shall include for each item: the quantities; manufacturer's name and catalog numbers; the ANSI number specified, sizes; detail information or catalog cuts; finishes; door and frame size and materials; location and hardware set identification using same opening numbers as indicated on drawings; corresponding reference standard type number or function number from manufacturer's catalog if not covered by ANSI or BHMA; and list of abbreviations and template numbers. If openings are moved to different hardware sets, provide a cross reference between the new hardware set and original hardware set.

Keying Schedule; GA.

Keying schedule developed in accordance with DHI-03, after the keying meeting with the user.

SD-13 Certificates

Hardware and Accessories; FIO.

The hardware manufacturer's certificates of compliance stating that the supplied material or hardware item meets specified requirements. Each certificate shall be signed by an official authorized to certify in behalf of the product manufacturer and shall identify quantity and date or dates of shipment or delivery to which the certificates apply. A statement that the proposed hardware items appear in BHMA-01, BHMA-02 and BHMA-03 directories of certified products may be submitted in lieu of certificates.

1.3 PREDELIVERY CONFERENCE

Upon approval of the Hardware Schedule, the construction Contractor shall arrange a conference with the hardware supplier, Contracting Officer and the using agency to determine keying system requirements. Location of the key control storage system, set-up and key identification labeling will also be determined.

1.4 DELIVERY, STORAGE, AND HANDLING

Hardware shall be delivered to the project site in the manufacturer's original packages. Each article of hardware shall be individually packaged in the manufacturer's standard commercial carton or container, and shall be properly marked or labeled to be readily identifiable with the approved hardware schedule. Each change key shall be tagged or otherwise identified with the door for which its cylinder is intended. Where double cylinder functions are used or where it is not obvious which is the key side of a door, appropriate instructions shall be included with the lock and on the hardware schedule. Manufacturer's printed installation instructions, fasteners, and special tools shall be included in each package.

1.5 SPECIAL TOOLS

Special tools, such as those supplied by the manufacturer, unique wrenches, and dogging keys, shall be provided as required to adjust hardware items.

1.6 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

1.7 OPERATION AND MAINTENANCE MANUALS

Six complete copies of maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides shall be provided. The instructions for electro-magnetic closer holder release devices shall include simplified diagrams as installed.

PART 2 PRODUCTS

2.1 GENERAL HARDWARE REQUIREMENTS

Hardware shall conform to the requirements specified herein and the HARDWARE SETS listing at the end of this section.

2.2 TEMPLATES

Requirements for hardware to be mounted on metal doors or metal frames shall be coordinated between hardware manufacturer and door or frame manufacturer by use of templates and other information to establish location, reinforcement required, size of holes, and similar details. Templates of hinges shall conform to BHMA ANSI/BHMA A156.7.

2.3 HINGES

Hinges shall conform to BHMA ANSI/BHMA A156.1. Hinges used on metal doors and frames shall also conform to BHMA ANSI/BHMA A156.7. Except as otherwise specified, hinge sizes shall conform to the hinge manufacturer's printed recommendations.

2.3.1 Hinges for Reverse Bevel Doors with Locks

Hinges for reverse bevel doors with locks shall have pins that are made nonremovable by means such as a set screw in the barrel, or safety stud, when the door is in the closed position.

2.3.2 Pivot Hinges

Pivot hinges shall conform to BHMA ANSI/BHMA A156.4.

2.3.3 Spring Hinges

Spring hinges shall conform to BHMA ANSI/BHMA A156.17.

2.4 LOCKS AND LATCHES

To the maximum extent possible, locksets, latchsets and deadlocks shall be the products of a single manufacturer. Strikes for wood frames and pairs of wood doors shall be furnished with wrought boxes.

2.4.1 Bored Lock and Latchsets

Bored lock, latchsets, and strikes shall be series 4000 and shall conform to BHMA ANSI/BHMA A156.2, Grade 1. Bored type locks and latches for doors 1-3/8 inches thick and over shall have adjustable bevel fronts or otherwise conform to the shape of the door.

2.4.2 Auxiliary Locks and Associated Products

Bored and mortise dead locks and dead latches, narrow style dead locks and dead latches, dead latches, and dead bolts shall conform to BHMA ANSI/BHMA A156.5. Bolt and latch retraction shall be dead bolt style. Strike boxes shall be furnished with dead bolt and latch strikes for Grade 1.

2.4.3 Lock Cylinders (Rim and Bored)

Lock cylinders shall comply with BHMA ANSI/BHMA A156.5. Lock cylinder shall have not less than six pins. Cylinders shall have key removable type cores. A master keying system shall be provided. All locksets, lockable exit devices, and padlocks shall accept same interchangeable cores.

2.4.4 Padlocks

Padlocks shall conform to ASTM F 883. Straps and hasps shall conform to BHMA ANSI/BHMA A156.20.

2.4.5 Push/Pull Latches

Push/pull latches shall have a heavy duty tubular latch with 5-inch backset operated by stainless steel paddles. Operating mechanism shall be concealed with a formed stainless steel cover. Paddles shall be engraved with minimum 5/8 inch high letters to read "PUSH" on one paddle and "PULL" on the other paddle.

2.4.6 Lock Trim

Lock trim shall be cast, forged, or heavy wrought construction of commercial plain design. In addition to meeting the test requirement of BHMA ANSI/BHMA A156.2 or BHMA ANSI/BHMA A156.13, lever handles, roses, and escutcheons shall be 0.050 inch thick, if unreinforced. If reinforced, the outer shell shall be 0.035 inch thick and the combined thickness shall be 0.070 inch except that knob shanks shall be 0.060 inch thick. Lever handles shall be of plain design with ends returned to no more than 1/2 inch from the door face.

2.5 EXIT DEVICES AND EXIT DEVICE ACCESSORIES

Exit devices and exit device accessories shall conform to BHMA ANSI/BHMA A156.3, Grade 1.

2.5.1 Exit Devices and Auxiliary Items

Trim shall be of wrought construction and commercial plain design with straight, beveled, or smoothly rounded sides, corners, and edges. Adjustable strikes shall be provided for rim type and vertical rod devices. Open back strikes shall be provided for pairs of doors with mortise and vertical rod devices; except open back strikes shall be used on labeled doors only where specifically provided for in the published listings. Touch bars shall be provided in lieu of conventional crossbars and arms. Escutcheons shall be provided not less than 7 by 2-1/4 inches. Escutcheons

shall be cut to suit cylinders and operating trim. Operating trim opposite panic device shall be lever type.

2.6 KEYING

Locks shall be keyed in sets or subsets as scheduled. Change keys for locks shall be stamped with change number and the inscription "U.S. Property - Do Not Duplicate." Keys shall be supplied as follows:

Locks:	3 change keys each lock.
Master keys:	6 keys.
Control keys:	3 total.
Blank keys:	1 for each lock total.

The keys shall be furnished to the Contracting Officer arranged in a container for key control system storage in sets or subsets as scheduled.

2.7 DOOR CLOSING DEVICES

Door closing devices shall conform to BHMA ANSI/BHMA A156.4, Grade 1. Closing devices shall be products of one manufacturer for each type specified. The opening resistance of closing devices shall not exceed 15 1bf applied at the latch stile or exceed 5 1bf where low opening resistance is scheduled.

2.7.1 Surface Type Closers

Surface type closers shall be Grade 1, Series C02000 Full Cover with options PT-4H, Size 1 or 2 through Size 6, and PT-4D with back check position valve. Other options shall be provided as scheduled. Except as otherwise specified, sizes shall conform to the manufacturer's published recommendations. Closers for outswinging exterior doors shall have parallel arms or shall be top jamb mounted. Closers for doors close to a wall shall be of narrow projection so as not to strike the wall at the 90-degree open position.

2.8 DOOR CONTROLS - OVERHEAD HOLDERS

Door controls - overhead holders shall conform to BHMA ANSI/BHMA A156.8.

2.9 ELECTRO-MECHANICAL HOLDERS

Electro-mechanical door closer/holders shall conform to BHMA ANSI/BHMA A156.15 and shall release the door upon activation of the building fire alarm system or interruption of electric power. Door closers with integral hold-open device and detector which senses visible and invisible particles of combustion shall conform to BHMA ANSI/BHMA A156.15. The door shall be released upon activation of the detector or interruption of electric power.

2.10 ARCHITECTURAL DOOR TRIM

Architectural door trim shall conform to BHMA ANSI/BHMA A156.6.

2.10.1 Door Protection Plates

2.10.1.1 Armor Plates

Armor plates shall be Type J101 stainless steel, 36 inches in height, and 2 inches less in width than the width of the door for single doors and 1 inch

less for pairs of doors. Edges of metal plates shall be beveled.

2.10.1.2 Kick Plates

Kick plates shall be Type J106 plastic, and color shall be as selected by Contracting Officer. Width of plates shall be 2 inches less than door width for single doors and 1 inchless for pairs of doors. Height shall be 10 inches, except where the bottom rail is less than 10 inches the plate shall extend to within 1/2 inch of the panel mold or glass bead. Edges of plates shall be beveled.

2.10.1.3 Mop Plates

Mop plates shall be Type J107 plastic and color shall be as selected by Contracting Officer. Width of plates shall be 2 inches less than door width for single doors and 1 inchless for pairs of doors. The height shall be 4 inches. Edges of plates shall be beveled.

2.10.2 Door Edge Guards

Door edge guards shall be furnished to protect door edges with the required cut-outs for hardware items such as hinges, flush bolts, and locks. Door edge guards shall satisfy fire door ratings. Door edge guards shall be mortise type, of angle to match door bevel, 0.50 inch thick stainless steel, 42 inches tall unless otherwise scheduled.

2.10.3 Push Plates

2.10.3.1 Flat Plates

Flat plates shall be Type J301 0.50 inch thick stainless steel. Edges of metal plates shall be beveled.

2.10.4 Door Pulls and Push/Pull Units

2.10.4.1 Door Pulls

Door pulls shall be Category J400 stainless steel of plain modern design, minimum 1 inch diameter round bar, 10 inches center to center and 2 inch clearance from door. Pulls for hollow metal, mineral core wood or kalamein doors shall be Type J405 thru-bolted to Type J301 flat push plates.

2.10.5 Push and Pull Bars

Push and pull bars shall be Category J500, aluminum of size and design as scheduled.

2.11 AUXILIARY HARDWARE

Auxiliary hardware, consisting of door holders, and door stops, shall conform to BHMA ANSI/BHMA A156.16. Lever extension flush bolts shall be Type L14081. Dust-proof strikes shall be Type L04011 for doors that are not fire rated. Dust-proof strikes shall be Type L04021 for fire rated doors.

2.12 MISCELLANEOUS

2.12.1 Metal Thresholds

Thresholds shall conform to BHMA ANSI/BHMA A156.21. Thresholds for

scheduled exterior doors shall be extruded aluminum of the type and shall provide proper clearance and an effective seal with specified weather stripping. Where required, thresholds shall be modified to receive projecting bolts of flush bolts and exit devices. Thresholds for doors accessible to the handicapped shall be beveled with slopes not exceeding 1:2 and with heights not exceeding 1/2 inch. Air leakage rate of weatherstripping shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.12.2 Rain Drips

Extruded aluminum, not less than 0.07 inch thick, clear anodized. Door sill rain drips shall be 1-1/2 inches to 1-3/4 inches high by 5/8 inch projection. Overhead rain drips shall be approximately 1-1/2 inches high by 2-1/2 inches projection and shall extend 2 inches on either side of the door opening width.

2.12.3 Aluminum Housed Type Weatherseals

Weatherseals of the type indicated shall consist of extruded aluminum retainers not less than 0.07 inch wall thickness with vinyl, neoprene, silicone rubber, polyurethane or vinyl brush inserts. Aluminum shall be clear (natural) anodized. Weatherseal material shall be of an industrial/commercial grade. Seals shall remain functional through all weather and temperature conditions. Air leakage rate of weatherstripping shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.12.4 Gasketing

Gasketing shall be a compression type seal, silicon based, self-adhesive product for use on steel door frames with wood doors for 20-minute and 45 minute C-label. Color shall be bronze. Air leakage rate of gasketing shall not exceed 0.5 cubic feet per minute per lineal foot of crack when tested in accordance with ASTM E 283 at standard test conditions.

2.12.5 Key Control Storage System

Key control storage system shall conform to BHMA ANSI/BHMA A156.5, Type E8331, capacity of 50 keys, and shall be properly labeled for key identification. Set up, identification labeling and location of the key control storage shall be as directed at the Predelivery Conference.

2.13 FASTENINGS

Fastenings of proper type, size, quantity, and finish shall be supplied with each article of hardware. Machine screws and expansion shields shall be used for attaching hardware to concrete or masonry. Fastenings exposed to the weather in the finished work shall be of brass, bronze, or stainless steel. Sex bolts, through bolts, or machine screws and grommet nuts, where used on reverse-bevel exterior doors shall employ one-way screws or other approved tamperproof screws. Screws for the jamb leaf of half-mortise and full-surface hinges attached to structural steel frames shall be one-way or other approved tamperproof type.

2.14 FINISHES

Unless otherwise specified, finishes shall conform to those identified in

BHMA ANSI/BHMA A156.18. Where painting of primed surfaces is required, painting is specified in Section 09900 PAINTING, GENERAL.

2.14.1 Hinges

Hinges shall have 630 finish where scheduled to be stainless steel and shall have 630 or 626 finish at all other locations.

2.14.2 Lock and Door Trim

Locks shall be either 630 or 626 finish. Door trim shall be 630 finish.

2.14.3 Door Closers and Control Devices

Door closers shall have covers with 689 finish. Other exposed parts of closers shall be either 630 or 626 finish. Door control devices shall be either 630 or 626 finish.

2.14.4 Auxilliary Hardware

Auxilliary hardware shall have either 630 or 626 finish except where exposed to the exterior, finish shall be either 630 or 673.

2.14.5 Weatherstripping and Thresholds

Weatherstripping and thresholds shall have 673 finish.

2.15 HARDWARE FOR FIRE DOORS

Hardware for fire doors shall conform to the requirements of NFPA 80 and NFPA 101.

PART 3 EXECUTION

3.1 APPLICATION

Hardware shall be located in accordance with DHI-04 and DHI-05, except that deadlocks shall be mounted 48 inches above finish floor. When approved, slight variations in locations or dimensions will be permitted. Application shall be in accordance with DHI-A115.IG or DHI A115-W. Push/pull latches shall be installed with both paddles in the down position. Door control devices for exterior doors such as closers and holders, shall be attached to doors with thru bolts and nuts or sex bolts. Alternate fastening methods may be approved by the Contracting Officer when manufacturers' documentation is submitted to verify that the fastening devices and door reinforcements are adequate to resist wind induced stresses. Electric hardware items shall be installed in accordance with manufacturer's printed installation procedures.

3.1.1 Hardware for Fire Doors and Smoke-Control Door Assemblies

Hardware for fire doors shall be installed in accordance with the requirements of NFPA 80. Exit devices installed on fire doors shall have a visible label bearing the marking "Fire Exit Hardware". Other hardware installed on fire doors, such as locksets, closers, and hinges shall have a visible label or stamp indicating that the hardware items have been approved by an approved testing agency for installation on fire-rated doors. Hardware for smoke-control door assemblies shall be installed in accordance with NFPA 105.

3.1.2 Door-Closing Devices

Door-closing devices shall be installed and adjusted in accordance with the templates and printed instructions supplied by the manufacturer of the devices. Insofar as practicable, doors opening to or from halls and corridors shall have the closer mounted on the room side of the door.

3.1.3 Key Control Storage Systems

Key control storage system shall be installed where directed by the Contracting Officer.

3.1.4 Kick Plates and Mop Plates

Kick plates shall be installed on the push side of single-acting doors. Mop plates shall be installed on the pull side of the single acting doors.

3.1.5 Auxiliary Hardware

Lever extension flush bolts shall be installed at the top and bottom of the inactive leaf of pairs of doors. The bottom bolt shall operate into a dust-proof floor strike or threshold.

3.1.6 Thresholds

Thresholds shall be secured with a minimum of three fasteners per single door width and six fasteners per double door width with a maximum spacing of 12 inches. Exterior thresholds shall be installed in a bed of sealant with expansion anchors and stainless steel screws. Minimum screw size shall be No. 10 length, dependent on job conditions, with a minimum of 3/4 inch thread engagement into the floor or anchoring device used.

3.1.7 Rain Drips

Door sill rain drips shall align with the bottom edge of the door. Overhead rain drips shall align with bottom edge of door frame rabbet. Drips shall be set in sealant and fastened with stainless steel screws.

3.1.8 Weatherseals

Weatherseals shall be located as indicated, snug to door face and fastened in place with color matched metal screws after door and frames have been finish painted. Screw spacing shall be as recommended by manufacturer.

3.1.9 Gasketing

Gasketing shall be installed at the inside edge of the hinge and head and latch sides of door frame. Frames shall be toleranced for a 1/8 inch clearance between door and frame. Frames shall be treated with tape primer prior to installation.

3.2 OPERATIONAL TESTS

Prior to acceptance of any electrical hardware system, an operational test shall be performed to determine if devices are operating as intended by the specifications. Wiring shall be tested for correct voltage, current carrying capacity, and proper grounding. Stray voltages in lock wiring shall be eliminated to prevent locking devices from releasing in critical

situations.

3.3 HARDWARE SETS

HW - 1

Door No. 1001

Pair to Have:

3 pr.	Hinges A5112 NRP
2 ea.	Panic Devices Type 6 Function 04 with lever exterior trim
2 ea.	Cylinders E09211
2 ea.	Closer C02061 (with holder)
2 ea.	Stops L02131
1 ea.	Threshold J32100

HW - 2

Door No's. 1016B, 1054A, 1032B

Each Door to Have:

1 1/2 pr.	Hinges A8111 NRP
1 ea.	Panic Device Type 1 Function 09
1 ea.	Closer C02061 x PT4G
1 ea.	Kickplate
1 ea.	Head and Sill Raindrip
1 ea.	Threshold J32100
1 set	Weatherstrip

HW - 3

Door No.'s 1031, 1058, 1077, 1093

Each Pair to Have:

3 pr.	Hinges A8111 NRP
2 ea.	Panic Devices Type 02 Function 10
2 ea.	Cylinders E09211
2 ea.	Closer C02061
2 ea.	Stops L02131
1 ea.	Threshold J32100
2 ea.	Kickplate
1 set	Weatherstripping

HW - 4

Door No's. 1045A

Door to Have:

1 1/2 pr.	Hinges A8111 NRP
1 ea.	Lockset F86 knurled knob
1 ea.	Overhead Stop/Holder C08511
1 ea.	Kickplate

1	ea.	Head and Sill Raindrip
1	ea.	Threshold J32100
1	set	Weatherstrip

HW - 5

Door No. 1045

Pair Doors to Have:

3	pr.	Hinges A8111 NRP
1	ea.	Lockset F86 knurled knob
1	pr.	Flushbolts L04081
2	ea.	Overhead Stop/Holders C08511
2	ea.	Kickplates
1	ea.	Head and Sill Raindrip
1	ea.	Threshold J32100
1	set	Weatherstrip

HW - 6

Door No's. 1003, 1005, 1008, 1010, 1033A

Each Door to Have:

1 1/2	pr.	Hinges A8111
1	ea.	Lockset F81
1	ea.	Closer C02011
1	ea.	Stop L02101
1	ea.	Kickplate
1	ea.	Mopplate
1	set	Smokeseals

HW - 7

Door No's. 1004, 1019, 1033, 1037

Each Door to Have:

1 1/2	pr.	Hinges A8111
1	ea.	Lockset F81 at all doors except 1033 & 1037
1	ea.	Closer C02011 at all doors except 1004, 1033 and 1037
1	ea.	Stop L02251 @ 1004
1	ea.	Kickplate
1	ea.	Mopplate
1	ea.	Door edge guard @ hinge jamb @ door 1019

HW - 8

Door No. 1102

Door to Have:

2	pr.	Hinges A8111 NRP
1	ea.	Lockset F86
1	ea.	Overhead Stop/Holder C08511

1	ea.	Armorplate
1	ea.	Head & Sill Raindrip
1	ea.	Threshold J32100
1	set	Weatherstrip

HW - 9

Door No's. 1007, 1013, 1014, 1015, 1026, 1028, 1047, 1067, 1069, 1073, 1075, 1081, 1083, 1089, 1091, 1098, 1100

Each Door to Have:

1 1/2	pr.	Hinges A8131
1	ea.	Privacy Set F76
1	ea.	Stop L02101
1	ea.	Kickplate

HW - 10

Door No's. 1011, 1012, 1016, 1016A, 1039, 1040, 1042, 1042A, 1043, 1050, 1102A

Each Door to Have:

1 1/2	pr.	Hinges A8131
1	ea.	Lockset F81
1	ea.	Stop L02101 @ all doors except 1012, 1102A
1	ea.	Kickplate
1	ea.	Mop Plate

HW - 11

Door No's. 1027, 1046

Each Door to Have:

1 1/2	pr.	Hinges A8111
1	ea.	Closer C02021 x PT4G @ door 1096; C02011
1	ea.	Push Plate
1	ea.	Pull and Plate
1	ea.	Stop L02101
1	ea.	Kickplate Plate
1	ea.	Mopplate

HW - 12

Door No's. 1006, 1009, 1017, 1018, 1029, 1034, 1038, 1041, 1049, 1056, 1088, 1094, 1095, 2001, 2002, 2002A

Each Door to Have:

1 1/2	pr.	Hinges A8131
1	ea.	Lockset F81
1	ea.	Kickplate @ all doors except 1006 and 1009
1	ea.	Mopplate @ doors 1006 and 1009
1	ea.	Stop L02101

HW - 13

Door No's. 1020, 1021

Each Door to Have:

1 1/2 pr.	Hinges A8111
1 ea.	Push/Pull Latch
1 ea.	Closer C02011
1 ea.	Stop L02101
1 ea.	Kickplate
1 ea.	Mopplate
1 set	Smokeseals

HW - 14

Door No's. 1035, 1038A

Each Door to Have:

1 1/2 pr.	Hinges A8111
1 ea.	Lockset F91
1 ea.	Closer C02011
1 ea.	Stop L02101 @ 1038A only
1 ea.	Kickplate
1 ea.	Door edge guard @ hinge jamb door 1038A only
1 set	Smokeseals

HW - 15

Door No's. 1022, 1023, 1024, 1025, 1054, 1055, 1057, 1057A, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1070, 1071, 1076, 1078, 1084, 1085, 1086, 1087, 1092, 1096, 1101

Each Door to Have:

1 1/2 pr.	Hinges A8111
1 ea.	Lockset F84
1 ea.	Closer C02021
1 ea.	Stop L02101
1 ea.	Kickplate
1 ea.	Mopplate
1 ea.	Door edge guards @ hinge jamb doors 1057 and 1057A
1 set	Smokeseals

HW - 16

Door No's. 1032, 1032A

Each Pair to Have:

3 pr.	Hinges A8111
2 ea.	Panic Devices Type 02, Function 10
2 ea.	Closers C02011 x PT4G

2 ea.	Kickplate Plates
2 ea.	Mopplates
2 ea.	Door edge guards @ hinge jamb
1 set	Smokeseals

HW - 17

Door No. 1042C

Door to Have:

1 pr.	Hinges K51071
1/2 pr.	Hinges A5112
1 ea.	Latchset F75
1 ea.	Overhead Stop/Holder CO8511
1 ea.	Kickplate
1 ea.	Head and Sill Raindrip

HW - 18

Door NO. 1042B

Door to Have:

1 1/2 pr.	Hinges A8111
1 ea.	Lockset F81
1 ea.	Overhead Stop/Holder CO8511
2 ea.	Armor Plate
1 ea.	Threshold
1 set	Weatherstrip

HW - 19

Door No's. 1072, 1080, 1097

Each Door to Have:

1 1/2 pr.	Hinges A8111
1 ea.	Lockset F91
1 ea.	Closer C02021 x PT4G
1 ea.	Kickplate
1 ea.	Mopplate
1 ea.	Door edge guard @ hinge stile

HW - 20

Door No. 1066

Door to Have:

1 1/2 pr.	Hinges A8111
1 ea.	Privacy Set F76
1 ea.	Closer C02011 x PT4G
1 ea.	Stop L02101
1 ea.	Kickplate

1 ea.	Mopplate
1 set	Smokeseals

HW - 21

Door No's 1068A, 1068B, 1074A, 1074B, 1082A, 1082B, 1090A, 1090B, 1099A, 1099B

Each Door to Have:

1 1/2 pr.	Hinges A8131
1 ea.	Lockset F91
1 ea.	Stop L02101
1 ea.	Kickplate
1 ea.	Mopplate

HW - 22

Door No's 1002, 1030, 1079

Pair to Have:

3 pr.	Hinges A8111
1 ea.	Panic Device Type 02, Function 08 without cylinder
2 ea.	Closers C00201
2 ea.	Stop L02101
2 ea.	Kickplate Plates
2 ea.	Mopplates
2 ea.	Door edge guards @ hinge jambs
1 set	Smokeseals

[AM #0001] 1 set Magnetic hold-opens C00011 with extensions sized for proper door position. Match electrical voltage supply.

NOTE: Provide electrical hookups to door magnetic devices.

HW - 23

Door No. 2003

Pair to Have:

3 pr.	Hinges A8131
1 ea.	Deadbolt E0121
1 pr.	Flushbolts L04081
2 ea.	Stops L02101
1 ea.	Threshold J32100
1 set	Weatherstripping

HW - 24

Door No. 1053

Door to Have:

1 pr.	Hinges K51071
1/2 pr.	Hinges A5112

1 ea. Lockset F91
1 ea. Overhead Stop/Holder CO8511
1 ea. Armor Plate
1 ea. Head and Sill Raindrip

HW - 25

Teacher Cabinet Doors (Ref. Elevation 2/A20)

Each Door to Have:

1 1/2 pr. Hinges A8131
1 ea. Lockset F91
1 ea. Wall Stop L02101

HW - 26

Classroom Storage Cabinets (Ref. Elevation 1/A20, 4/A20, 6/A20, 7/A20)

Each to Have:

[AM #0001] 6 pr. Hinges A8131
2 ea. Dummy Lever and Trim
2 ea. Roller Latches E09101
1 ea. Wall Stop L02101

HW - 27

Classroom Storage Cabinets (Ref. Elevations 8/A20, 11/A20)

Each to Have:

6 pr. Hinges A8131
3 ea. Lockset F91
1 ea. Dummy Lever and Trim
1 ea. Wall Stop L02101
2 ea. Roller Latches E09101

HW - 28

Reception Double Acting Door (Refer Elevation [AM #0001] 5/A21, 6/A21)

1-1/2 pr. Double Acting Hinges K81131

[AM #0001] HW - 29

Classroom Storage Cabinets (Ref. Elevation 1/A1)

Each to Have:

15 pr. Hinges A8131
5 ea. Dummy Lever and Trim
5 ea. Roller Latches EO9101
1 ea. Wall Stop L02101

[AM #0001] HW - 30

Stage Doors

Each Pair to Have:

2	Geared Hinges: Equal to Roton 780-208HD
2	Wire Pulls: Extruded aluminum wire pull, satin finish, equal to Stanley No. 4484
2	Magnetic Catches B03171

-- End of Section --

SECTION 09510

ACOUSTICAL CEILINGS
08/96
AM #0001

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 635	(1995) Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings
ASTM C 636	(1992) Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings
ASTM E 1264	(1990) Standard Classification for Acoustical Ceiling Products
ASTM E 1414	(1991a) Standard Test for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.

1.2 GENERAL REQUIREMENTS

Acoustical treatment shall consist of sound controlling units mechanically mounted on a ceiling suspension system. The unit size, texture, finish, and color shall be as specified. The location and extent of acoustical treatment shall be as shown on the drawings.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Acoustical Ceiling System; FIO.

Manufacturer's descriptive data, catalog cuts, and installation instructions.

SD-04 Drawings

Acoustical Ceiling System; FIO.

Drawings showing suspension system, method of anchoring and fastening,

details, and reflected ceiling plan.

SD-09 Reports

Ceiling Attenuation Class and Test; FIO.

Reports by an independent testing laboratory attesting that acoustical ceiling systems meet specified sound transmission requirements. Data attesting to conformance of the proposed system.

SD-13 Certificates

Acoustical Units; FIO.

Certificate attesting that the mineral based acoustical units furnished for the project contains recycled material and showing an estimated percent of such material.

SD-14 Samples

Acoustical Units; GA.

Four samples of each type of acoustical unit and each type of suspension grid tee section showing texture, finish, and color.

1.4 DELIVERY AND STORAGE

Materials shall be delivered to the site in the manufacturer's original unopened containers with brand name and type clearly marked. Materials shall be carefully handled and stored in dry, watertight enclosures. Immediately before installation, acoustical units shall be stored for not less than 24 hours at the same temperature and relative humidity as the space where they will be installed in order to assure proper temperature and moisture acclimation.

1.5 ENVIRONMENTAL REQUIREMENTS

A uniform temperature of not less than 60 degrees F nor more than 85 degrees F and a relative humidity of not more than 70 percent shall be maintained before, during, and after installation of acoustical units.

1.6 SCHEDULING

Interior finish work such as concrete and ceramic tile work shall be complete and dry before installation. Mechanical, electrical, and other work above the ceiling line shall be completed and heating, ventilating, and air conditioning systems shall be installed and operating in order to maintain temperature and humidity requirements.

1.7 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

1.8 EXTRA MATERIALS

Provide 2 full cartons of each type of ceiling panels to location as indicated by Contracting Officer. Tiles shall be from the same lot as those installed.

PART 2 PRODUCTS

2.1 ACOUSTICAL UNITS

Acoustical units shall conform to ASTM E 1264, Class A, and the following requirements:

2.1.1 Type C1 Units as Scheduled on Drawings

Type: III (mineral fiber). Type III acoustical units shall have a minimum recycled material content of 18 percent.
Minimum NRC: 0.65 when tested on mounting No. E-400
Pattern: D.
Nominal size: 24 by 24 x 3/4 inches.
Edge detail: Square.
Finish: Factory-applied white painted finish.
Minimum LR coefficient: 0.75.
Minimum CAC: 35 minimum.

2.1.2 Type C4 Units as Scheduled on Drawings

Type: X (mineral fiber with aluminum membrane-faced overlay). Type X, metal faced acoustical units shall have a minimum recycled material content of 18 percent.
Minimum NRC: 0.45 when tested on mounting No. E-400.
Pattern: Z, embossed.
Nominal size: 24 x 24 x 5/8 inches.
Edge detail: Square.
Finish: Factory-applied white vinyl finish.
Minimum LR coefficient: 0.75.
Minimum CAC: 40 minimum.

2.1.3 Type C5 Units as Scheduled on Drawings

Type: XII (fiberglass base with membrane-faced overlay). Type IX acoustical units shall have a minimum recycled material content of 18 percent.
Minimum NRC: 0.85 when tested on mounting No. E-400.
Pattern: Z, nubby.
Nominal size: 24 by 24 x 3/4 inches.
Edge detail: Square.
Finish: Factory-applied white finish.
Minimum LR coefficient: 0.75.
Minimum CAC: N/A.

2.2 SUSPENSION SYSTEM

Suspension system shall be standard exposed-grid standard width flange, and shall conform to ASTM C 635 for intermediate-duty systems. Suspension systems for Type C4 panels shall have an aluminum cap. All other suspension systems shall be either galvanized steel or aluminum at Contractor's option. Surfaces exposed to view shall have a white baked-enamel finish. Wall molding shall have a flange of not less than 15/16 inch. Mitered corners shall be provided.

2.3 HANGERS

Hangers shall be galvanized steel wire. Hangers and attachment shall

support a minimum 300 pound ultimate vertical load without failure of supporting material or attachment. [AM #0001] Galvanized steel wire shall conform to ASTM A 641, Class 3 zinc coating and be a minimum of No. 12 gage wire.

2.4 ACCESS PANELS

Access panels shall match adjacent acoustical units and shall be designed and equipped with suitable framing and fastenings for removal and replacement without damage. Panel shall be not less than 12 by 12 inches or more than 24 by 24 inches. An identification plate of 0.032 inch thick aluminum, 3/4 inch in diameter, stamped with the letters "AP" and finished the same as the unit, shall be attached near one corner on the face of each access panel.

2.5 FINISHES

Acoustical units and suspension system members shall have manufacturer's standard textures, patterns and finishes as specified. Ceiling suspension system components shall be treated to inhibit corrosion.

2.6 CEILING ATTENUATION CLASS AND TEST

Ceiling attenuation class (CAC) range of acoustical units, when required, shall be determined in accordance with ASTM E 1414. Test ceiling shall be continuous at the partition and shall be assembled in the suspension system in the same manner that the ceiling will be installed on the project. System shall be tested with all acoustical units installed.

PART 3 EXECUTION

3.1 INSTALLATION

Acoustical work shall be provided complete with necessary fastenings, clips, and other accessories required for a complete installation. Mechanical fastenings shall not be exposed in the finished work. Hangers shall be laid out for each individual room or space. Hangers shall be placed to support framing around beams, ducts, columns, grilles, and other penetrations through ceilings. Main runners and carrying channels shall be kept clear of abutting walls and partitions. At least two main runners shall be provided for each ceiling span. Wherever required to bypass an object with the hanger wires, a subsuspension system shall be installed, so that all hanger wires will be plumb.

3.1.1 Suspension System

Suspension system shall be installed in accordance with ASTM C 636 and as specified herein. There shall be no hanger wires or other loads suspended from underside of steel decking.

3.1.1.1 Plumb Hangers

Hangers shall be plumb and shall not press against insulation covering ducts and pipes.

3.1.1.2 Splayed Hangers

Where hangers must be splayed (sloped or slanted) around obstructions, the resulting horizontal force shall be offset by bracing, countersplaying, or

other acceptable means.

3.1.2 Wall Molding

Wall molding shall be provided where ceilings abut vertical surfaces. Wall molding shall be secured not more than 3 inches from ends of each length and not more than 16 inches on centers between end fastenings.

3.1.3 Acoustical Units

Acoustical units shall be installed in accordance with the approved installation instructions of the manufacturer. Lay all C1 units in straight pattern, lay all C4 and C5 units in basketweave pattern. Edges of acoustical units shall be in close contact with metal supports, with each other, and in true alignment. Acoustical units shall be arranged so that units less than one-half width are minimized. Units in exposed-grid system shall be held in place with manufacturer's standard hold-down clips, if units weigh less than 1 psf and within 10 feet of any exterior door.

3.2 CEILING ACCESS PANELS

Ceiling access panels shall be located directly under the items which require access.

3.3 CLEANING

Following installation, dirty or discolored surfaces of acoustical units shall be cleaned and left free from defects. Units that are damaged or improperly installed shall be removed and new units provided as directed.

-- End of Section --

SECTION 10440

INTERIOR SIGNAGE
05/95
AM #0001

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z97.1	(1984; Rev 1994) Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings

1.2 GENERAL

Interior signage shall be of the sizes and types shown on the drawings, shall conform to the requirements specified herein, and shall be provided at the locations indicated. Signs shall be complete with lettering, framing as detailed, and related components for a complete installation. Signs shall be the standard product of a manufacturer regularly engaged in the manufacture of such products and shall essentially duplicate signs that have been in satisfactory use at least 2 years prior to bid opening.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Interior Signage; FIO.

Manufacturer's descriptive data, catalogs cuts, installation and cleaning instructions.

SD-04 Drawings

Interior Signage; FIO.

Drawings showing elevations of each type of sign, dimensions, details and methods of mounting or anchoring, shape and thickness of materials, and details of construction. A schedule showing the location of each sign type shall be included.

SD-14 Samples

Interior Signage; GA.

One sample of each of the following sign types showing typical quality and workmanship. The samples may be installed in the work, provided each sample is identified and location recorded.

a. Direction sign.

b. Door sign.

c. Building directory.

Two samples of manufacturer's standard color chips for each material requiring color selection.

1.4 EXTRA STOCK

The Contractor shall provide 10 changeable message strips for sign type [AM #0001 C.

1.5 DELIVERY AND STORAGE

Materials shall be delivered to the jobsite in manufacturer's original packaging and stored in a clean, dry area.

PART 2 PRODUCTS

2.1 COLOR, FINISH, AND CONTRAST

Color shall be in accordance with Section 09915 COLOR SCHEDULE. In buildings required to be handicapped-accessible, the characters and background of signs shall be eggshell, matte, or other non-glare finish. Characters and symbols shall contrast with their background - either light characters on a dark background or dark characters on a light background.

2.2 CHARACTER PROPORTIONS AND HEIGHTS

Letters and numbers on signs in handicapped-accessible buildings, which do not designate permanent rooms or spaces, shall have a width-to-height ratio between 3:5 and 1:1 and a stroke-width-to-height ratio between 1:5 and 1:10. Characters and numbers on signs shall be sized according to the viewing distance from which they are to be read. The minimum height is measured using an upper case letter X. Lower case characters are permitted. Suspended or projected overhead signs shall have a minimum character height of 3 inches.

2.3 PLAQUE SIGNS

Plaque signs shall be a modular type signage system. Signs shall be fabricated of acrylic plastic conforming to ANSI Z97.1.

2.3.1 Standard Modular Plaque Signs

Plaque signs shall consist of matte finish acrylic plastic, 1/4" thickness and size as shown. Corners of signs shall be 1/2 inch radius.

2.3.2 Modular Changeable Strip Plaque Signs (Sign Type [AM #0001] "C")

Changeable message strip plaque signs shall consist of cast acrylic back laminated to matte finish laminated thermosetting Type ES plastic face with

message slots, as detailed, for insertion of changeable message strips. Size of signs shall be as shown on the drawings. Thickness to be 1/4" including 1/10 inch space for message strips. Individual 1/16 inch thick message strips to permit removal, change, and reinsertion shall be provided as detailed. Corners of signs shall be 1/2 inch radius.

2.3.3 Type of Mounting For Plaque Signs

Surface mounted signs shall be provided with 1/16 inch thick vinyl foam tape.

2.4 GRAPHICS

2.4.1 Raised and Brailled Characters and Pictorial Symbol S

Letters and numbers on signs which designate permanent rooms and spaces in handicapped-accessible buildings shall be raised 1/32 inch upper case, sans serif or simple serif type and shall be accompanied with Grade 2 Braille. Raised characters shall be at least 5/8 inch height, but no higher than 2 inches. Pictograms shall be accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram shall be 6 inches minimum in height. Accessible facilities shall use the international symbols for accessibility.

2.4.2 Graphics Application

Signage graphics shall conform to the following:

a. Tactile characters and symbols shall be raised 1/32 inch minimum from the sign face. Signs shall be of one piece construction. Add-on characters are not acceptable.

b. Pressure sensative precision cut vinyl letters shall be provided on changeable message strips for sign type [AM #0001] "C". Edges & corners of finished letter forms and graphics shall be true and clean. Color as selected from Contracting Officer.

2.4.3 Messages

See schedule for message content, Typeface: Helvetica medium. Type size as indicated.

PART 3 EXECUTION

3.1 INSTALLATION

Signs shall be installed in accordance with approved manufacturer's instructions at locations shown on the drawings. Signs shall be installed plumb and true at mounting heights indicated, and by method shown or specified. Signs which designate permanent rooms and spaces in handicapped-accessible buildings shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 inchesabove the finish floor to the centerline of the sign. Mounting location for such signage shall be so that a person may approach within 3 inches of signage without encountering protruding objects or standing within the swing of a door. Signs on doors or other surfaces shall not be installed until finishes on such surfaces have been installed.

3.1.1 Anchorage

Anchorage shall be in accordance with approved manufacturer's instructions. Anchorage not otherwise specified or indicated shall include slotted inserts, expansion shields, and power-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine carriage bolts for steel; lag bolts and screws for wood.

3.1.2 Protection and Cleaning

The work shall be protected against damage during construction. Hardware and electrical equipment shall be adjusted for proper operation. Glass, frames, and other sign surfaces shall be cleaned in accordance with the manufacturer's approved instructions.

3.2 SIGNAGE SCHEDULE

3.2.1 Location 1059

a. Sign Type: C
b. Text Line 1: DISCOURSE LAB
c. Text Line 2: 1
d. Quantity: 1

3.2.2 Location 1060

a. Sign Type: C
b. Text Line 1: COMPUTER LAB
c. Text Line 2: 2
d. Quantity: 1

3.2.3 Location 1061

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 3
d. Quantity: 1

3.2.4 Location 1062

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 4
d. Quantity: 1

3.2.5 Location 1063

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 5
d. Quantity: 1

3.2.6 Location 1064

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 6
d. Quantity: 1

3.2.7 Location 1065

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 7
d. Quantity: 1

3.2.8 Location 1070

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 8
d. Quantity: 1

3.2.9 Location 1071

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 9
d. Quantity: 1

3.2.10 Location 1076

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 10
d. Quantity: 1

3.2.11 Location 1078

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 11
d. Quantity: 1

3.2.12 Location 1084

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 12
d. Quantity: 1

3.2.13 Location 1086

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 13
d. Quantity: 1

3.2.14 Location 1087

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 14
d. Quantity: 1

3.2.15 Location 1092

a. Sign Type: C
b. Text Line 1: ART
c. Text Line 2: 15
d. Quantity: 1

3.2.16 Location 1096

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 16
d. Quantity: 1

3.2.17 Location 1101

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 17
d. Quantity: 1

3.2.18 Location 1023

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 19
d. Quantity: 1

3.2.19 Location 1024

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 20
d. Quantity: 1

3.2.20 Location 1054

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 22
d. Quantity: 1

3.2.21 Location 1055

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 23
d. Quantity: 1

3.2.22 Location 1025

a. Sign Type: C
b. Text Line 1: CLASSROOM
c. Text Line 2: 21
d. Quantity: 1

3.2.23 Location 1011

a. Sign Type: C
b. Text Line 1: SUPPLY CLERK
[AM #0001] c. Text Line 2: TECHNICIAN

d. Quantity: 1

3.2.24 Location 1016, 1005

a. Sign Type: C
b. Text Line 1: PRINCIPAL
c. Quantity: 2

3.2.25 Location 1050

a. Sign Type: C
b. Text Line 1: OFFICE
c. Quantity: 1

3.2.26 Location 1043

a. Sign Type: C
b. Text Line 1: P.E. OFFICE
c. Quantity: 1

3.2.27 Location 1003

a. Sign Type: B
b. Text Line 1: [AM #0001] OFFICE
c. Quantity: 1

3.2.28 Location 1012

a. Sign Type: B
b. Text Line 1: LOUNGE
c. Quantity: 1

3.2.29 Location 1085

a. Sign Type: B
b. Text Line 1: KITCHEN
c. Quantity: 1

3.2.30 Location 1008

a. Sign Type: C
b. Text Line 1: CLINIC
c. Quantity: 1

3.2.31 Location 1007

a. Sign Type: A
b. Text Line 1: RESTROOM
c. Quantity: 1
d. Notes: Wheelchair Glyph; Male/Female Glyph

3.2.32 Location 1013

a. Sign Type: A
b. Text Line 1: WOMEN
c. Quantity: 1
d. Notes: Wheelchair Glyph; Female Glyph

3.2.33 Location 1014

a. Sign Type: A
b. Text Line 1: MEN
c. Quantity: 1
d. Notes: Wheelchair Glyph; Male Glyph

3.2.34 Location 1019

a. Sign Type: B
b. Text Line 1: BOOKS
c. Quantity: 1

3.2.35 Location 1020

a. Sign Type: A
b. Text Line 1: GIRLS
c. Quantity: 1
d. Notes: Wheelchair Glyph; Female Glyph

3.2.36 Location 1021

a. Sign Type: A
b. Text Line 1: BOYS
c. Quantity: 1
d. Notes: Wheelchair Glyph; Male Glyph

3.2.37 Location 1022

a. Sign Type: C
b. Text Line 1: COUNSELOR
c. Quantity: 1

3.2.38 Location 1034

a. Sign Type: B
b. Text Line 1: STORAGE
c. Quantity: 1

3.2.39 Location 1033

a. Sign Type: B
b. Text Line 1: STAGE
c. Quantity: 1

3.2.40 Location 1035

a. Sign Type: B
b. Text Line 1: STORAGE
c. Quantity: 1

3.2.41 Location 1032

a. Sign Type: B
b. Text Line 1: MULTIPURPOSE
c. Quantity: 2

3.2.42 Location 1038

a. Sign Type: B

b. Text Line 1: STORAGE
c. Quantity: 1

3.2.43 Location 1057

a. Sign Type: B
b. Text Line 1: MEDIA
c. Quantity: 2

3.2.44 Location 1039

a. Sign Type: [AM #0001] C
b. Text Line 1: [AM #0001] EDUCATION
[AM #0001] c. Text Line 2: TECHNOLOGIST
d. Quantity: 2

3.2.45 Location 1040

a. Sign Type: C
b. Text Line 1: [AM #0001] INFORMATION SPECIALIST
[AM #0001] c. Text Line 2: OFFICE
d. Quantity: 1

3.2.46 Location 1041

a. Sign Type: B
b. Text Line 1: A/V STORAGE
c. Quantity: 1

3.2.47 Location 1042

a. Sign Type: B
b. Text Line 1: KITCHEN ENTRANCE
c. Quantity: 1

3.2.48 Location 1042

a. Sign Type: B
b. Text Line 1: KITCHEN EXIT
c. Quantity: 1

3.2.49 Location 1102

a. Sign Type: B
b. Text Line 1: P.E. STORAGE
c. Quantity: 1

3.2.50 Location 1080

a. Sign Type: B
b. Text Line 1: JANITOR
c. Quantity: 1

3.2.51 Location 1072

a. Sign Type: B
b. Text Line 1: STORAGE
c. Quantity: 1

3.2.52 Location 1077

a. Sign Type: B
b. Text Line 1: STORAGE
c. Quantity: 1

3.2.53 Location 1066

a. Sign Type: A
b. Text Line 1: RESTROOM
c. Quantity: 1
d. Notes: Wheelchair Glyph; Male/Female Glyph

3.2.54 Location 1050

a. Sign Type: C
b. Text Line 1: OFFICE
c. Quantity: 1

3.2.55 Location 1043

a. Sign Type: C
b. Text Line 1: PE OFFICE
c. Quantity: 1

-- End of Section --